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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/017,497	12/14/2001	Brian W. Baird	50001/83:2 USA	5632

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EXAMINER	
STAICOVICI, STEFAN	
ART UNIT	**PAPER NUMBER**
1732	

DATE MAILED: 05/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/017,497	BAIRD ET AL	
	Examiner	Art Unit	
	Stefan Staicovici	1732	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 February 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-33 and 38-75* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1-23, 31-33, 38-45, 47-50, 52-55, 57-60, 62-65, 67-69, 71-75* is/are allowed.

6)☒ Claim(s) *24-30,46,51,56,61,66 and 70* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicants' amendment filed February 7, 2005 has been entered. Claims 1-3, 6, 11, 15, 19, 24, 26-29, 31-33 have been amended. Claims 34-37 have been canceled. New claims 38-75 have been added.

Claims 1-33 and 38-75 are pending in the instant application.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 24-30, 46, 51, 56, 61 and 66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Piwczyk *et al.* (US Patent No. 6,376,797 B1) in view of Elliott *et al.* (US Patent No. 6,032,997).

Piwczyk *et al.* ('797) teach the basic claimed process of laser cutting silicone substrates having a thickness of 700 microns using a Q-switched Nd:YAG pulsed laser beam (wavelength is shorter than 400 nm) and forming a kerf (see col. 4, lines 1-3 and 30-35).

Regarding claims 24-25, Piwczyk *et al.* ('797) do not teach an alignment step of the laser beam when cutting said silicone bodies. Elliott *et al.* ('997) teach a glass (non-reflective to laser light) vacuum chuck for aligning and holding a wafer during processing. Further, Elliott *et al.*

('997) teach a method of aligning including, forming alignment marks on the back of the wafer (first and second features), placing the wafer on a transparent glass vacuum chuck, directing an alignment laser beam from a single laser through the transparent glass vacuum chuck, and then redirecting alignment beam to strike the alignment marks on the wafer (see col. 3, lines 60-67). Therefore, it would have been obvious for one of ordinary skill in the art to have used as an alignment tool a vacuum chuck as taught by Elliott *et al.* ('997) to cut the silicone substrate in the process of Piwczyk *et al.* ('797) because, Elliott *et al.* ('997) teach that such a vacuum provides a variety of advantages when shaping a wafer (silicon material), whereas Piwczyk *et al.* ('797) teach laser cutting a silicone substrate, hence forming a kerf.

In regard to claims 26-28, Elliott *et al.* ('997) teach a glass (non-reflective to laser light) vacuum chuck for aligning and holding a wafer during processing. Hence, it is submitted that a glass chuck that is non-reflective to laser light transmits laser light and as such inhibits laser damage. Therefore, it would have been obvious for one of ordinary skill in the art to have used as an alignment tool a vacuum chuck as taught by Elliott *et al.* ('997) to cut the silicone substrate in the process of Piwczyk *et al.* ('797) because, Elliott *et al.* ('997) teach that such a vacuum provides a variety of advantages when shaping a wafer (silicon material), whereas Piwczyk *et al.* ('797) teach laser cutting a silicone substrate, hence forming a kerf.

Specifically regarding claim 29, because Elliott *et al.* ('997) teach a glass vacuum chuck, it is submitted that glass (silicone) absorbs laser light in the ultraviolet region. Therefore, it would have been obvious for one of ordinary skill in the art to have used as an alignment tool a vacuum chuck as taught by Elliott *et al.* ('997) to cut the silicone substrate in the process of

Piwczyk *et al.* ('797) because, Elliott *et al.* ('997) teach that such a vacuum provides a variety of advantages when shaping a wafer (silicon material), whereas Piwczyk *et al.* ('797) teach laser cutting a silicone substrate, hence forming a kerf.

Regarding claim 30, Elliott *et al.* ('997) teach a vacuum chuck having a plurality of holes through which processing occurs (see Figure 1). Therefore, it would have been obvious for one of ordinary skill in the art to have used as an alignment tool a vacuum chuck as taught by Elliott *et al.* ('997) to cut the silicone substrate in the process of Piwczyk *et al.* ('797) because, Elliott *et al.* ('997) teach that such a vacuum provides a variety of advantages when shaping a wafer (silicon material), whereas Piwczyk *et al.* ('797) teach laser cutting a silicone substrate, hence forming a kerf.

In regard to claims 46 and 51, Elliott *et al.* ('997) teach the option of using a single laser system or two laser systems depending on the type of chuck material (see col. 5, line 66 through col. 6, line 17). Therefore, it would have been obvious for one of ordinary skill in the art to have used as an alignment tool a vacuum chuck as taught by Elliott *et al.* ('997) to cut the silicone substrate in the process of Piwczyk *et al.* ('797) because, Elliott *et al.* ('997) teach that such a vacuum provides a variety of advantages when shaping a wafer (silicon material), whereas Piwczyk *et al.* ('797) teach laser cutting a silicone substrate, hence forming a kerf.

Specifically regarding claims 61 and 66, Piwczyk *et al.* ('797) teach that the laser system may be operated with a different pulse energy, pulse repetition rate, pulse duration depending on the material to be cut and the desired results (see col. 9, lines 9-21), hence teaching that the pulse energy and material processed (bite size) are result-effective variables. Therefore, it would have

been obvious for one of ordinary skill in the art to have used routine experimentation in the process of Piwczyk *et al.* ('797) in view of Elliott *et al.* ('997) to determine an optimum pulse energy and bite-size because, Piwczyk *et al.* ('797) teach that the laser system may be operated with a different pulse energy, pulse repetition rate, pulse duration depending on the material to be cut and the desired results, hence teaching that the pulse energy and bite-size are result-effective variables.

Regarding claim 70, Elliott *et al.* ('997) teach the use of alternative chuck materials, such as ceramic materials, to form electrostatic chucks (see col. 1,lines 34-40). It is submitted that CaF_2 and MgF_2 are ceramic materials. Therefore, it would have been obvious for one of ordinary skill in the art to have used as an alignment tool a vacuum chuck as taught by Elliott *et al.* ('997) to cut the silicone substrate in the process of Piwczyk *et al.* ('797) because, Elliott *et al.* ('997) teach that such a vacuum provides a variety of advantages when shaping a wafer (silicon material), whereas Piwczyk *et al.* ('797) teach laser cutting a silicone substrate, hence forming a kerf.

Allowable Subject Matter

4. Claims 1-23, 31-33, 38-45, 47-50, 52-55, 57-60, 62-65, 67-69, 71-75 are allowed.

Response to Arguments

5. Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stefan Staicovici, Ph.D. whose telephone number is (571) 272-1208. The examiner can normally be reached on Monday-Friday 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael P. Colaianni, can be reached on (571) 272-1196. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Stefan Staicovici, PhD

Stefan Staicovici 5/2/05

Primary Examiner

AU 1732

May 2, 2005